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ABSTRACT

The State Summary of Results presents a compilation of the scores of Michigan's fourth and seventh grade students who participated in the educational assessment along with discussion of the possible meaning and significance of the results. It also attempts to respond to the controversy which has surrounded the assessment program since its inception in 1970 by delineating its purpose which is the provision of information for decision-making at the state, local, and individual student levels. Because these data are derived from students taking objective referenced tests, they reflect student attainment of a specific set of learner performance objectives which were developed by Michigan educators in an attempt to articulate the skills which students should achieve in school. The tests used to measure attainment of the objectives were developed through a cooperative effort between the Michigan Department of Education and local district educators. (Author/DEP)

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# Fourth Report

# State Summary of Results 1974-75

## Michigan Department of Education

# STATE SUMMARY OF RESULTS

1974-75

## MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

Michigan Educational Assessment Program
Michigan Department of Education
Lansing, Michigan
March, 1975

# FOREWORD

The Michigan Educational Assessment Program, now in its sixth year of assessing Michigan's fourth and seventh grade students' performance in reading and mathematics, was initiated by the State Board of Education, supported by the Governor, and funded by the Legislature initially through enactment of Act 307 of the Public Acts of 1969 and, subsequently, under Act 38 of the Public Acts of 1970. Each year, the Assessment Program publishes five basic reports:

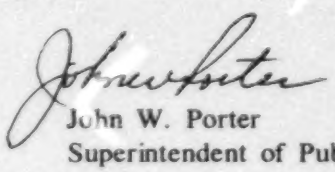
1. *Objectives and Procedures*
2. *Individual Student and Classroom Reports*
3. *School and District Reports*
4. *State Summary of Results*
5. *Technical Report*

This report is the fourth in this series.

The *State Summary of Results* presents a compilation of the scores of the state's fourth and seventh grade students who participated in the educational assessment along with discussion of the possible meaning and significance of the results. It also attempts to respond to the controversy which has surrounded the assessment program since its inception in 1970 by delineating its purpose which is the provision of information for decision-making at the state, local, and individual student levels.

Because these data are derived from students taking objective referenced tests, they reflect student attainment of a specific set of learner performance objectives which were developed by Michigan educators in an attempt to articulate the skills which students should achieve in school. The tests used to measure attainment of the objectives were developed through a cooperative effort between the Michigan Department of Education and local district educators.

This report was prepared by the members of the Educational Assessment Program staff. Questions or requests for additional information relative to this report should be directed to them.



John W. Porter
Superintendent of Public Instruction

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## I. Introduction

In October, 1974, all public schools in Michigan with fourth and seventh grades participated in the Michigan Educational Assessment Program. The program provided reading and mathematics tests constructed to measure the attainment of specific sets of student performance objectives.

School districts received the test results summarized for each student, classroom, school, and the district. The state summary, discussed in this report, is a summary of the results from all students tested in 1974.

## II. Utility and Value of the Data

The Assessment Program tested about 320,000 fourth and seventh grade pupils in reading and mathematics. In addition, the program included a large scale piloting of a first grade assessment, development of new test items for future use, and professional development workshops, seminars, and consultative services to support local district assessment efforts. The total program cost about $900,000. The printing, distributing, scoring, and reporting of tests for grades four and seven was about $.79 per pupil.

The Assessment Program is designed to accomplish three purposes:

1. provide state officials with some indication of the progress of Michigan schools in meeting the needs of students in the basic skills.
2. provide local school officials including classroom teachers with some indication of the progress of the local district in meeting the needs of students in the basic skills.
3. provide individual parents with some indication of their child's progress in acquiring the basic skills.

This year's results are an indication of how the statewide program can be of value to state officials, local educators, and to parents and students. Utilizing the results contained in FIGURE 1 on the following pages, the value of the state administered program can be dramatically demonstrated.

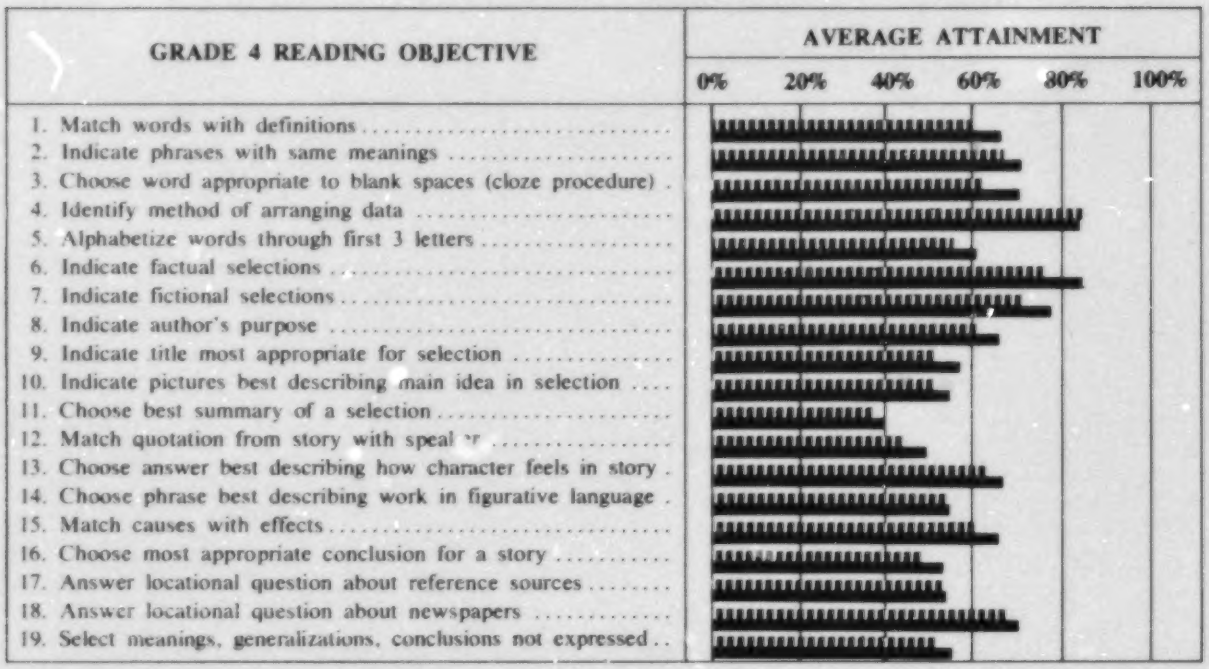
FIRST, state officials can readily determine from FIGURE 1 whether any measureable improvement is taking place in student attainment in the basic skills of reading and math at the fourth and seventh grades. In addition, state officials can zero in on the performance objectives which seem to be giving students the greatest difficulty and initiate statewide programs to assist local districts in addressing these difficulties. Over time, it is expected that 80 percent of the students will demonstrate successful performance according to the objectives specified.[1]

SECOND, local school officials can determine the relationship between student attainment in their district and student attainment statewide by constructing figures similar to FIGURE 1 using the local data which is provided by the Program. Such a construction will provide local officials with valuable information on student attainment in the basic skills of reading and math and will pinpoint the areas which may need curricular modification.

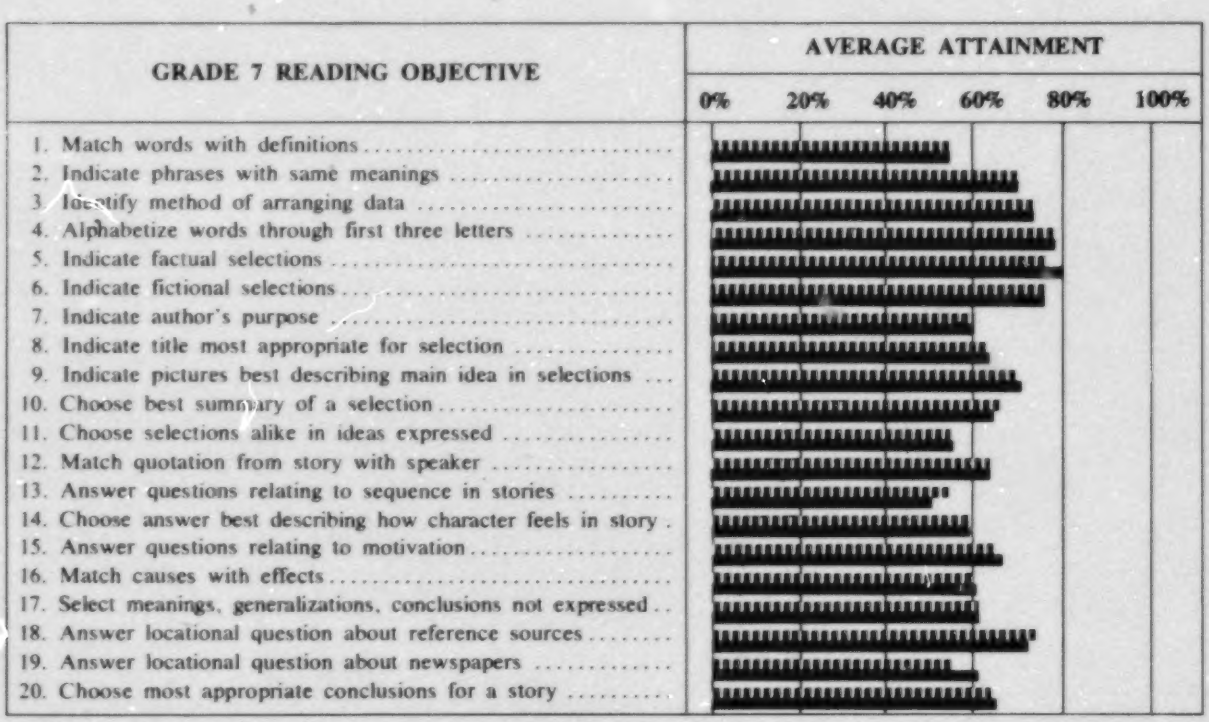
THIRD, parents of fourth and seventh graders have the option of requesting FIGURE 1 from the local district to determine how well their child is doing, in relation to others, in the attainment of the basic skills of reading and math. Parents also will have a better indication of the strengths and weaknesses of their child's progress as the report on attainment is continued over the span of the fourth and seventh grades.

[1] It is estimated that approximately 20% of the students are either in special education instruction (5%) or participating in the state compensatory education program (15%). The 80% figure mentioned above was selected to exclude the students who are in either special education or compensatory education classes. However, in time, with continued success of these two programs, the 80% level should be raised.

**FIGURE 1.**
**Statewide Summary, Michigan Educational Assessment Program, 1973 and 1974.**

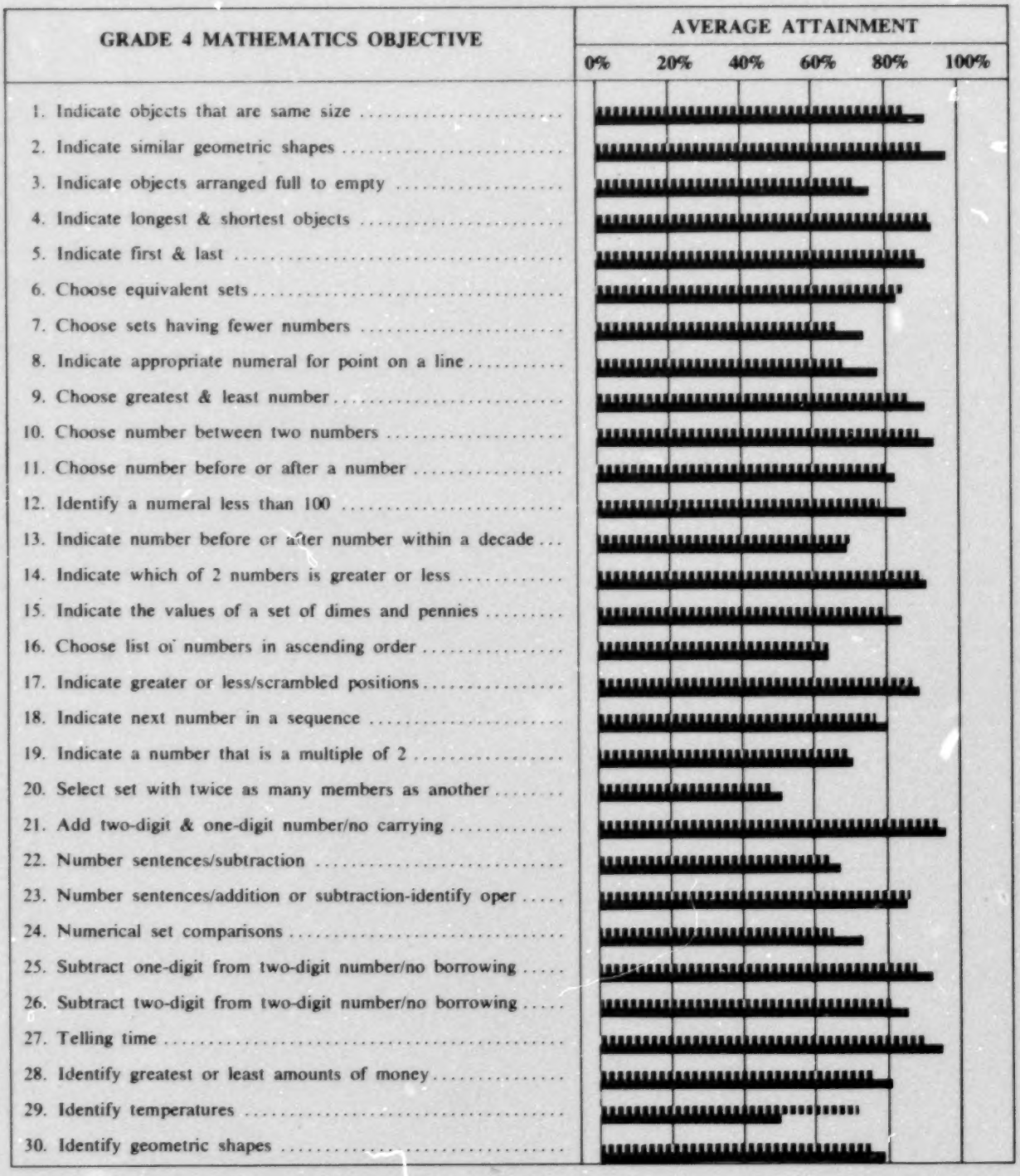

GRADE 4 READING OBJECTIVE
AVERAGE ATTAINMENT
0%
20%
40%
60%
80%
100%
1. Match words with definitions
2. Indicate phrases with same meanings
3. Choose word appropriate to blank spaces (cloze procedure)
4. Identify method of arranging data
5. Alphabetize words through first 3 letters
6. Indicate factual selections
7. Indicate fictional selections
8. Indicate author's purpose
9. Indicate title most appropriate for selection
10. Indicate pictures best describing main idea in selection
11. Choose best summary of a selection
12. Match quotation from story with speaker
13. Choose answer best describing how character feels in story
14. Choose phrase best describing work in figurative language
15. Match causes with effects
16. Choose most appropriate conclusion for a story
17. Answer locational question about reference sources
18. Answer locational question about newspapers
19. Select meanings, generalizations, conclusions not expressed

NOTE: Solid bar is 1974 attainment rate
Broken bar is 1973 attainment rate


GRADE 7 READING OBJECTIVE
AVERAGE ATTAINMENT
0%
20%
40%
60%
80%
100%
1. Match words with definitions
2. Indicate phrases with same meanings
3. Identify method of arranging data
4. Alphabetize words through first three letters
5. Indicate factual selections
6. Indicate fictional selections
7. Indicate author's purpose
8. Indicate title most appropriate for selection
9. Indicate pictures best describing main idea in selections
10. Choose best summary of a selection
11. Choose selections alike in ideas expressed
12. Match quotation from story with speaker
13. Answer questions relating to sequence in stories
14. Choose answer best describing how character feels in story
15. Answer questions relating to motivation
16. Match causes with effects
17. Select meanings, generalizations, conclusions not expressed
18. Answer locational question about reference sources
19. Answer locational question about newspapers
20. Choose most appropriate conclusions for a story

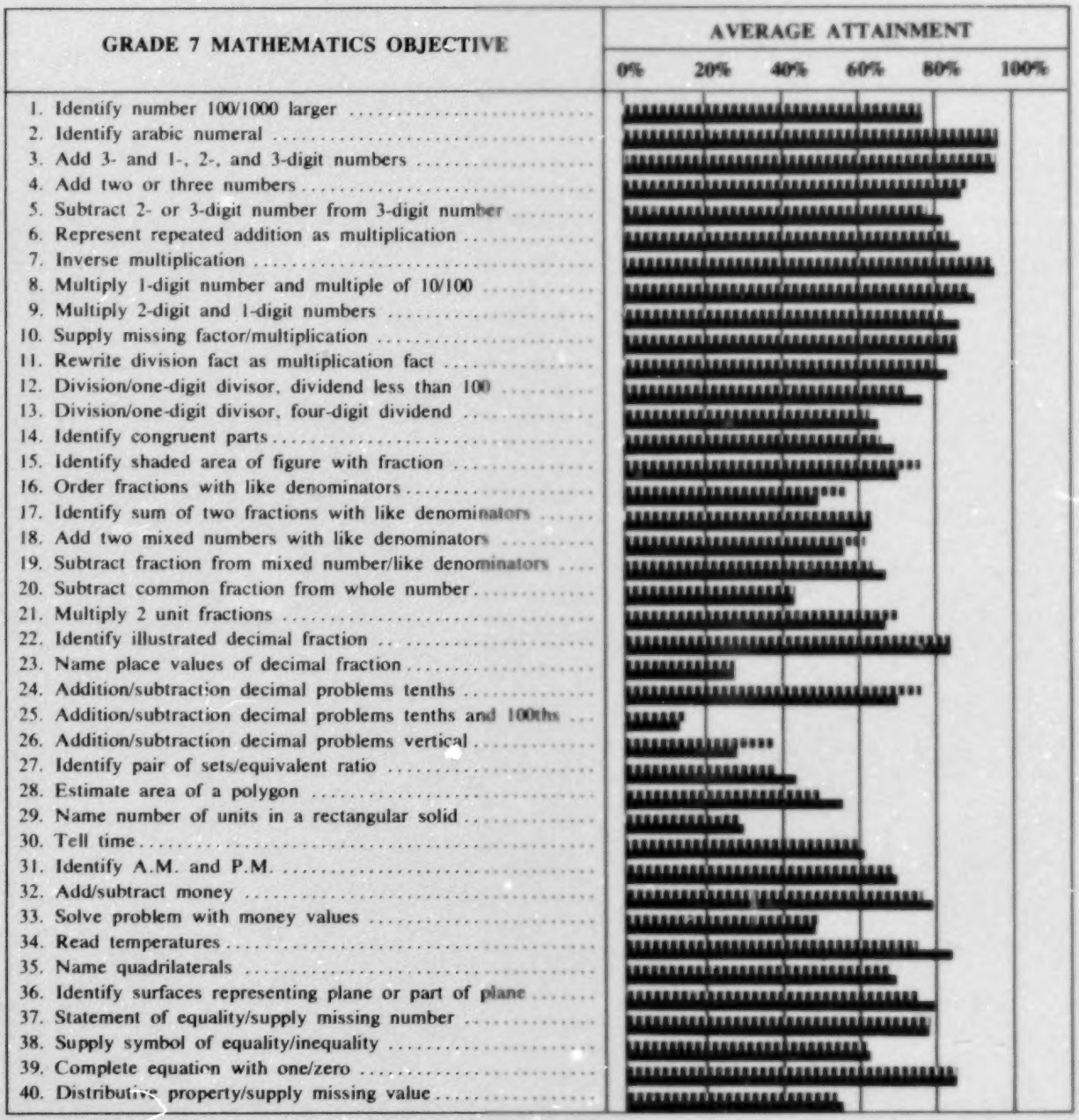
NOTE: Solid bar is 1974 attainment rate
Broken bar is 1973 attainment rate

FIGURE 1. (Continued)


GRADE 4 MATHEMATICS OBJECTIVE
AVERAGE ATTAINMENT
0%
20%
40%
60%
80%
100%
1. Indicate objects that are same size
2. Indicate similar geometric shapes
3. Indicate objects arranged full to empty
4. Indicate longest & shortest objects
5. Indicate first & last
6. Choose equivalent sets
7. Choose sets having fewer numbers
8. Indicate appropriate numeral for point on a line
9. Choose greatest & least number
10. Choose number between two numbers
11. Choose number before or after a number
12. Identify a numeral less than 100
13. Indicate number before or after number within a decade
14. Indicate which of 2 numbers is greater or less
15. Indicate the values of a set of dimes and pennies
16. Choose list of numbers in ascending order
17. Indicate greater or less/scrambled positions
18. Indicate next number in a sequence
19. Indicate a number that is a multiple of 2
20. Select set with twice as many members as another
21. Add two-digit & one-digit number/no carrying
22. Number sentences/subtraction
23. Number sentences/addition or subtraction-identify oper
24. Numerical set comparisons
25. Subtract one-digit from two-digit number/no borrowing
26. Subtract two-digit from two-digit number/no borrowing
27. Telling time
28. Identify greatest or least amounts of money
29. Identify temperatures
30. Identify geometric shapes

NOTE: Solid bar is 1974 attainment rate
Broken bar is 1973 attainment rate

FIGURE 1. (Continued)


GRADE 7 MATHEMATICS OBJECTIVE
AVERAGE ATTAINMENT
0%
20%
40%
60%
80%
100%
1. Identify number 100/1000 larger
2. Identify arabic numeral
3. Add 3- and 1-, 2-, and 3-digit numbers
4. Add two or three numbers
5. Subtract 2- or 3-digit number from 3-digit number
6. Represent repeated addition as multiplication
7. Inverse multiplication
8. Multiply 1-digit number and multiple of 10/100
9. Multiply 2-digit and 1-digit numbers
10. Supply missing factor/multiplication
11. Rewrite division fact as multiplication fact
12. Division/one-digit divisor, dividend less than 100
13. Division/one-digit divisor, four-digit dividend
14. Identify congruent parts
15. Identify shaded area of figure with fraction
16. Order fractions with like denominators
17. Identify sum of two fractions with like denominators
18. Add two mixed numbers with like denominators
19. Subtract fraction from mixed number/like denominators
20. Subtract common fraction from whole number
21. Multiply 2 unit fractions
22. Identify illustrated decimal fraction
23. Name place values of decimal fraction
24. Addition/subtraction decimal problems tenths
25. Addition/subtraction decimal problems tenths and 100ths
26. Addition/subtraction decimal problems vertical
27. Identify pair of sets/equivalent ratio
28. Estimate area of a polygon
29. Name number of units in a rectangular solid
30. Tell time
31. Identify A.M. and P.M.
32. Add/subtract money
33. Solve problem with money values
34. Read temperatures
35. Name quadrilaterals
36. Identify surfaces representing plane or part of plane
37. Statement of equality/supply missing number
38. Supply symbol of equality/inequality
39. Complete equation with one/zero
40. Distributive property/supply missing value

NOTE: Solid bar is 1974 attainment rate
Broken bar is 1973 attainment rate

### III. Comparisons with 1973-74 Data

Many of the reading and mathematics objectives tested in 1973-74 were included in the 1974-75 assessment. In some cases, changes were made in one or more of the test items measuring the objectives, and caution should be used in analyzing year-to-year changes in the performance levels of these objectives. It is important to remember that different students were tested in the two years. Nevertheless, it is informative to compare performance levels from 1973-74 to 1974-75 as a beginning point in understanding what changes in relative performance have taken place.

TABLE 1 summarizes the changes which occurred in the student attainment rates for those objectives which were measured in both years. (No allowance has been made for changes in the test items.) The table shows each test area and the number of objectives for which a gain or loss in performance was observed. As can be seen, several objectives were attained by larger percents of students, but a few, primarily at the seventh grade, were attained by a smaller percent of students.

### IV. Distribution of Attainment of Objectives

TABLE 2 shows several interesting data from the 1974-75 state assessment results.

It can be observed that Michigan students do better in attaining mathematics objectives than reading objectives.

There were more objectives which were difficult for students to attain in the area of seventh grade mathematics than in the other tests.

There were more objectives attained by 80% or more of the students than there were objectives attained by 20% or fewer of the students.

TABLE 2 is an important benchmark of student attainment of basic skills in that it provides a ready reference in answer to the question, "Are Michigan youth improving in student performance in the basic skills of reading and mathematics?"

## TABLE 1

### NUMBER OF OBJECTIVES SHOWING A GAIN (+) OR A LOSS (-) IN PERCENT ATTAINMENT OVER THE TWO-YEAR PERIOD, 1973-74 to 1974-75

| Change in Percentage Attainment Rates, 1973-74 to 1974-75 | Test Area and Level | | | |
|---|---|---|---|---|
| | Grade 4 Mathematics | Grade 4 Reading | Grade 7 Mathematics | Grade 7 Reading |
| More Than +10 | 0 | 1 | 0 | 0 |
| +6 to +10 | 8 | 8 | 2 | 1 |
| +1 to +5 | 18 | 9 | 24 | 9 |
| No Change | 1 | 1 | 6 | 7 |
| -1 to -5 | 2 | 0 | 5 | 3 |
| -6 to -10 | 0 | 0 | 3 | 0 |
| More Than -10 | 1 | 0 | 0 | 0 |
| Total No. of Objectives | 30 | 19 | 40 | 20 |

## TABLE 2

## DISTRIBUTION OF OBJECTIVES BY ATTAINMENT RATE

| Percent of Students Attaining Objectives | Reading | | | | Mathematics | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade Four | | Grade Seven | | Grade Four | | Grade Seven | |
| | Number of Objectives | % of Objectives | Number of Objectives | % of Objectives | Number of Objectives | % of Objectives | Number of Objectives | % of Objectives |
| 90-100 | 0 | 0 | 0 | 0 | 10 | 33 | 4 | 10 |
| 80-89 | 2 | 11 | 1 | 5 | 9 | 30 | 9 | 23 |
| 70-79 | 4 | 21 | 5 | 25 | 7 | 23 | 8 | 20 |
| 60-69 | 5 | 26 | 10 | 50 | 2 | 7 | 8 | 20 |
| 50-59 | 7 | 37 | 4 | 20 | 2 | 7 | 3 | 8 |
| 40-49 | 1 | 5 | 0 | 0 | 0 | 0 | 4 | 10 |
| 30-39 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 20-29 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 |
| 10-19 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 0-10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

NOTE: This TABLE shows the number and percentage of objectives attained for each of ten categories. For example, there were only two fourth grade reading objectives (11% of all the reading objectives measured) that were attained by 80-89% of the fourth grade students tested.

### Objectives Attained by at Least 80 Percent of the Students or Less than 20 Percent of the Students

Of equal interest are objectives attained by most students and those attained by few students. TABLE 3 displays, in descending order, the objectives attained by at least 80 percent of the students, while TABLE 4 lists the objectives attained by 20 percent or fewer of the students. (The cutoff levels of 80 percent and 20 percent were selected because they represent the highest and lowest one-fifth of the students. They do not represent an "official" state criterion level.) A short form title of each objective is included in the tables; persons interested in reading the complete title should refer to the booklet, *Objectives and Procedures: The First Report of the 1974-75 Michigan Educational Assessment Program*.[2]

### VI Analysis of the Results

The Michigan Department of Education is asking curriculum specialists both within and outside of the Department to analyze the statewide assessment data. In the case of outside specialists the Department is contracting with appropriate groups of reading and mathematics specialists to review the test results and the objectives to determine specific areas which might be improved and to suggest implications of the data for Michigan educators.[3]

**TABLE 3**

**OBJECTIVES ATTAINED BY AT LEAST 80% OF PUPILS**

| % Attainment | Objective Title | Objective Number[a] |
|---|---|---|
| Grade 4, Math | | |
| 96 | Indicate similar geometric shapes | 2 |
| 96 | Add two-digit and one-digit number/no carrying | 21 |
| 94 | Telling time | 27 |
| 92 | Indicate objects that are same size | 1 |
| 92 | Indicate longest and shortest objects | 4 |
| 92 | Choose number between two numbers | 10 |
| 92 | Indicate which of two numbers is greater or less | 14 |
| 92 | Subtract one-digit from two-digit number/no borrowing | 25 |
| 91 | Indicate first and last | 5 |
| 90 | Choose greatest and least number | 9 |

[a] The Objective Number corresponds to the MEAP numbering system for objectives which were tested.

[2] For a list of objectives that were measured in 1973-74 but were not measured in 1974-75, see *Objectives and Procedures: The First Report of the 1974-75 Michigan Educational Assessment Program*, pp. 32-33.

[3] A similar report for 1973-74 has been published by the Michigan Council of Teachers of Mathematics. Entitled *MEAP Mathematics Interpretive Report 1973 Grade 4 and 7 Tests*. Monograph No. 7, the report can be obtained at $1.50 each by writing to Horace L. Mourer, MCTM Publications Chairman, 2165 E. Maple Road, Birmingham, Michigan 48008.

**TABLE 3 (Continued)**

| % Attainment | Objective Title | Objective Number[a] |
|---|---|---|
| 89 | Indicate greater or less/scrambled positions | 17 |
| 86 | Identify a numeral less than a 100 | 12 |
| 86 | Subtract two-digit from two-digit number/no borrowing | 26 |
| 84 | Indicate the values of a set of dimes and pennies | 15 |
| 84 | Number sentences/addition or subtraction-identify operation | 23 |
| 83 | Choose equivalent sets | 6 |
| 82 | Choose number before or after a number | 11 |
| 81 | Identify greatest or least amounts of money | 28 |
| 80 | Indicate next number in a sequence | 18 |
| Grade 4, Reading | | |
| 84 | Indicate factual selections | 6 |
| 83 | Identify method of arranging data | 4 |
| Grade 7, Math | | |
| 95 | Identify arabic numeral | 2 |
| 94 | Add 3- and 1-, 2-, and 3- digit numbers | 3 |
| 94 | Inverse multiplication | 7 |
| 91 | Multiply 1- digit number and multiple of 10/100 | 8 |
| 87 | Add two or three numbers | 4 |
| 87 | Represent repeated addition as multiplication | 6 |
| 87 | Multiply 2- digit and 1- digit numbers | 9 |
| 87 | Supply missing factor/multiplication | 10 |
| 86 | Complete equation with one/zero | 39 |
| 85 | Identify illustrated decimal fraction | 22 |

[a] The Objective Number corresponds to the MEAP numbering system for objectives which were tested.

TABLE 3 (Continued)

| % Attainment | Objective Title | Objective Number[a] |
|---|---|---|
| 84 | Read temperatures | 34 |
| 83 | Rewrite division fact as multiplication fact | 11 |
| 82 | Subtract 2- or 3- digit number from 3- digit number | 5 |
| Grade 7, Reading | | |
| 80 | Indicate factual selection | 5 |

[a] The Objective Number corresponds to the MEAP numbering system for objectives which were tested.

TABLE 4

OBJECTIVES ATTAINED BY 20% OR FEWER PUPILS

| %Attainment | Objective Title | Objective Number[a] |
|---|---|---|
| Grade 4, Math (none) | | |
| Grade 4, Reading (none) | | |
| Grade 7, Math 13 | Addition/subtraction decimal problems, tenths & hundredths | 25 |
| Grade 7, Reading (none) | | |

[a] The Objective Number corresponds to the MEAP numbering system for objectives which were tested.

The Department of Education encourages local school districts to parallel this state effort by reviewing the objectives and the tests in relation to local curricula, teaching materials, and instructional practices.[4] In doing these analyses, it would be useful to recall the assumptions made in collecting the data: (1) that the objectives describe essential skills, (2) that the skills can and should be attained by almost all pupils, and (3) that the tests provide reliable and valid measures of the objective.

It is recognized that low test performance will be of concern to local district educators and only careful analysis will reveal the reasons for low attainment rates of objectives. Some possible reasons are cited below:

[4] Materials to aid school districts in the interpretation and utilization of assessment results were distributed at a series of November workshops. In addition, filmstrips which have been distributed to the local districts are also available, on loan, from Research, Evaluation and Assessment Services.

1. Students do not have the skill described by the objective.
   a. Students cannot learn the skills.
   b. Students have not been taught the skills.
      1. Skills are taught later.
      2. Skills are not taught at all.
      3. Classroom materials currently in use do not include these skills.
   c. Instruction in the skills is ineffective.
      1. New teaching strategies are needed.
      2. Available instructional materials are inadequate.
      3. Staff skills need further development.
      4. Resources available are inadequate.
2. The objective is inappropriate for fourth (seventh) grade students.
   a. The objective should not be taught (philosophic disagreement).
   b. The objective is not minimal — cannot be attained by all students at this stage of development.
   c. The objective describes a skill which presently known teaching practices are unable to impart.
3. The test items are not adequate measures of the objective.
   a. The test items may require an inappropriate level of mastery.
   b. The reading level of the test items may be too difficult for some students.
   c. The mechanical aspects of the test — i.e., separate answer sheets, length of test, use of optical scan answer sheets, etc. — may have confused students.

### Summary and Conclusions

The purpose of this brief report was to provide state level information from the results of the sixth annual administration of the Michigan Educational Assessment Program tests. The test results are somewhat similar to those from 1973-74 but there seems to be a general increase in the percent of students who have attained the reading and mathematics skills tested.

Educators are encouraged to review carefully the test results for their own districts in light of the statewide data. Proper utilization of the data will result if attention is paid to the assumptions under which the assessment tests were developed and the factors which may have affected students' scores.

Local district educators are invited to share their test interpretations with the staff of the Michigan Educational Assessment Program.